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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/578,155	05/23/2000	Michael R. Krause	10991833-1	4285

22879 7590 10/11/2005

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EXAMINER

DINH, DUNG C

ART UNIT PAPER NUMBER

2152

DATE MAILED: 10/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/578,155

Applicant(s)

KRAUSE ET AL.

Examiner

Dung Dinh

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/4/05</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/30/05 has been entered.

Claims 1-45 are pending for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-45 are rejected under 103(a) as being unpatentable over Wilson et al. US patent 6,738,821 and further in view of William Shay "Understanding Data Communications and Networks".

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As per claim 1, Wilson teaches a source and destination resource comprising:

a source multiplexing units of work into a serial unit of work [serialized and encapsulated - see col.17 lines 30-37] in a defined order [sequence number - see col.17 lines 45-56] and transmitting the serial unit of work over a communication fabric; and

a destination receiving the serial unit of work, multiplexing the serial unit of work and providing a NAK for a unit of work received ahead of its defined order [when a sequence number gap is detected - see col.17 line 68 to col.18 line 10];

wherein the source and destination together implement a reliable datagram service (col.17 lines 49-55 "data stream" service).¹

Wilson does not specifically disclose a source buffer holding unacknowledged packet and not yet transmitted packets. However this element is inherent in the teaching of Wilson. However this feature is well known in the art as part of a sliding window protocol. Shay described well-known sliding window protocol similar to that described by Wilson. Shay teaches providing a buffer [fig.5.7 p.261] holding packets not yet acknowledged

¹ As explained in the prior office action, Wilson's "data stream" service is equivalent to applicant's "reliable datagram" service.

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[fig.5.7 frames between W and w+i-1] and packets not yet transmitted [fig.5.7 frames from w+i-1 onward]. Shay teaches maintaining not yet acknowledged packets in the buffers so that they can be resend [see page 264 3rd paragraph].

Wilson specifically disclose using sliding window [col.18 lines 17-18]. Hence, Wilson inherently has a buffer function as claimed. Furthermore, it would have been obvious for one of ordinary skill in the art to have hold not yet acknowledged packets and not yet transmitted packets in the source buffer because it would have enabled efficient retransmission the packets.

As per claim 2, Wilson does not specifically disclose providing ACK for each unit of work (packet) successfully received. Providing ACK for every packet received is simpler to program and it would have enabled the sender to promptly know which packet was successfully received. However, providing ACK for every packet would generate more traffic than providing an ACK for a set of packets. Hence, providing ACK for every packet received or for a set of packets is matter of design choice and would have been obvious variation from the teaching of Wilson as a whole.

As per claim 3, Wilson teaches providing ACK for a set unit of work which were successfully received col.17 lines 57-62].

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As per claim 4, Wilson teaches the source responding to the NAK to retransmit all unacknowledged units of work col.18 line 12-17].

As per claim 5, Wilson does not specifically disclose selective retransmitting unacknowledged units of work. It is apparent that Wilson is implement a Go-back-N sliding protocol [see Wilson col. 18 lines 1-17]. Shay discloses using Selective Repeat protocol is more efficient than Go-Back-N protocol in network that is not reliable [see Shay p.270 last paragraph]. Hence using selective retransmission would have been obvious over the teaching of Wilson. It would have been obvious for one of ordinary skill in the art to use selectively retransmission of unacknowledged packets because it would have reduced bandwidth usage.

As per claim 6, Wilson teaches including protocol header col.17 lines 3844, 50-56].

As per claim 7, Wilson teaches including sequence number field col.17 lines 52-56].

As per claim 8, Wilson can detect when there a gap in the sequence, hence it is inherent that Wilson system known the expected next sequence number in order to detect the gap.

As per claim 9, the limitation recited is an inherent characteristic of the sequence number. It is an inherent

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characteristic of the sequence number that a number received that is smaller than a currently expected number is from a duplicate transmission.

As per claims 10 and 11, Wilson does not specifically disclose silently drop or sending ACK for duplicate unit of work (packet). Silently drop the packet would reduce network bandwidth usage. However, sending the ACK response would ensure that the sender receive a positive response to each packet that was transmitted. Hence, Silently drop the duplicate packet or responding with an ACK would have been a matter of design choice because they achieve essentially the same result.

As per claim 12, Wilson does not specifically disclose sending a NAK if a packet is determined to be invalid. However, it would have been obvious to one of ordinary skill in the art to provide a NAK to the sender when the packet is corrupted or invalid so that the sender know to retransmit that packet.

As per claim 13, the recited limitation is an inherent characteristic of the sequence number. It is inherent that a packet containing sequence number larger than the expected next sequence number is a packet received ahead of its defined order.

As per claims 14-15, Wilson teaches the NAK indicates to the sender to send packets with sequence number equal to or greater than the next expected sequence number col.18 lines 29]. Wilson

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does not teach providing the expected next sequence number in the NAK response. Wilson teaches to put the sequence number of the last successfully received sequence number in the NAK response [col. 18 line 5]. Providing the expected sequence number or the last successfully received sequence number are clearly obvious variation of each other because both would achieved essentially the same result - that is notifying the sender the starting sequence number to begin retransmission. With the last successfully received number, the sender would retransmit starting with the next sequence number. With the expected sequence number, the sender would retransmit starting with the expected sequence number. Both methods would achieve essentially the same result in essentially the same way.

As per claim 16, Wilson teaches dropping the unit of work that is received ahead of its defined order col.18 lines 1012].

As per claim 17, Wilson does not teach temporarily keeping the unit of work that was received ahead of its order after verifying that the unit is valid. It would have been obvious for one of ordinary skill in the art to keep valid packet even through it was received ahead of its order because it would have reduced bandwidth usage by enabling the system to implement a retransmission scheme of only the missing packets instead of retransmitting all packets starting from the missing packet.

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As per claim 18, it is rejected under similar rationale as for claim 1 above.

As per claim 19, it is rejected under similar rationale as for claims 6-8 above.

As per claims 20-21, they are rejected under similar rationale as for claims 14-15 above.

As per claim 22, it is rejected under similar rationale as for claim 16 above.

As per claims 23-24, they are rejected under similar rationale as for claim 17 above.

As per claims 25, it is inherent that a source device can also function as a destination device and vice versa depending upon the direction of the data transfer.

As per claims 26-45, they are method claims corresponding to the system claims 1-25. Hence they are rejected under similar rationales as for claims above 1-25. Regarding claim 44, it is an inherent characteristic of any transmission system that a sender produces a unit of work (data to be transmit) and the destination consumes the unit of work (receiving the data).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dung Dinh

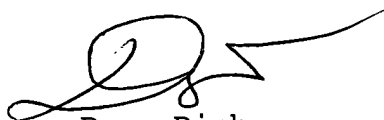
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whose telephone number is (571) 272-3943. The examiner can normally be reached on Monday-Friday from 7:00 AM - 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton Burgess can be reached at (571) 272-3949.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Dung Dinh', with a stylized flourish extending to the right.

Dung Dinh
Primary Examiner
September 30, 2005